

Application Spotlight

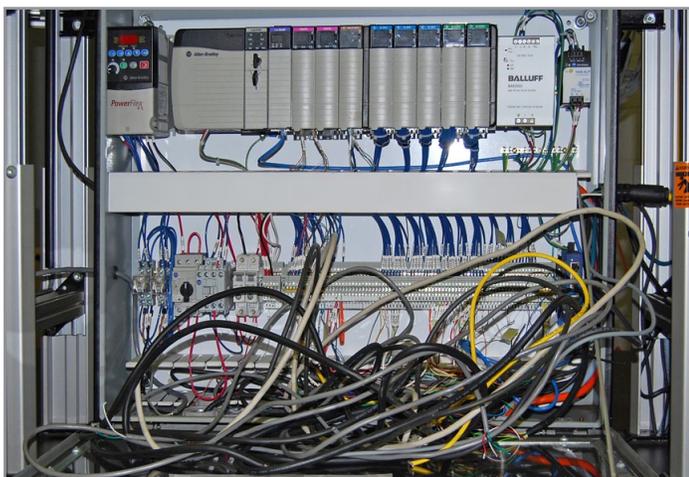
Simplify Integration and Overall Conveyor Costs with Distributed Modular I/O

Controls engineers and project managers are more than ever before expected to design a conveyor system that is modular and flexible while reducing the overall cost of the system. Traditionally, all conveyor wiring is run through conduit back to a central location, which can be either a control cabinet or junction box. This creates long cable runs and large cable bundles, making installation, maintenance, and troubleshooting a daunting task, and increases the overall cost of the system. Experienced controls engineers are looking to reduce the complexity of integrating such a system into an existing fieldbus such as Profibus, Profinet, EtherNet/IP, etc. Balluff has a distributed modular I/O solution that not only greatly reduces costly bus cable runs, but also distributes the I/O collection points along the conveyor system with more flexibility than traditional controls methodologies. In addition, the Balluff solution simplifies the integration into an existing bus network, regardless of the fieldbus used.

Benefits:

- Simplifies installation, maintenance, troubleshooting, as well as integration into an existing fieldbus
- Reduces the number of industrial network nodes and costly bus cables by up to 80%
- Improves conveyor flexibility and modularity
- Lowers costs across the machine; from design and assembly to installation and maintenance.

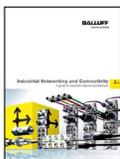
Conveyor Wiring - Before



In the "Before" picture above, devices such as RFID read heads, valve manifolds, photoeyes, proximity sensors and analog devices are all run separately in the conduit all the way back to the control cabinet. For identification systems, the processors and read heads had to be network enabled devices or were wired directly into the controls cabinet. Valve manifolds were either network enabled individually or terminated 25 times in a D-sub connector and manually wired to an output card on a PLC. In addition, the most expensive part of a device typically is the network chipset and the higher cost bus cables.

How it Works

Utilizing an open communication industry standard called IO-Link (www.io-link.com), slave devices communicate point-to-point over a standard 4-conductor sensor cable to the master device. The use of standard sensor cordsets dramatically reduces the total cost of the controls architecture.

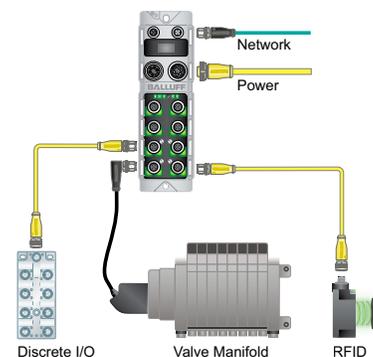


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Conveyor Wiring - After



In the "After" picture above, the long cable runs for sensor inputs are replaced by distributed modular I/O hubs that are placed along the conveyor to collect the I/O data. The master device collects the data from each slave device on the conveyor and transmits it via the network back to the PLC. Using distributed modular I/O, the number of network nodes and bus cables can be reduced by up to 80%. For analog channels, the cost of an expensive analog module in the PLC and shielded cables running long distances can be reduced by implementing analog input devices right at the source of the signal. Cost savings can also be realized in valve control and RFID by utilizing this technology.



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